

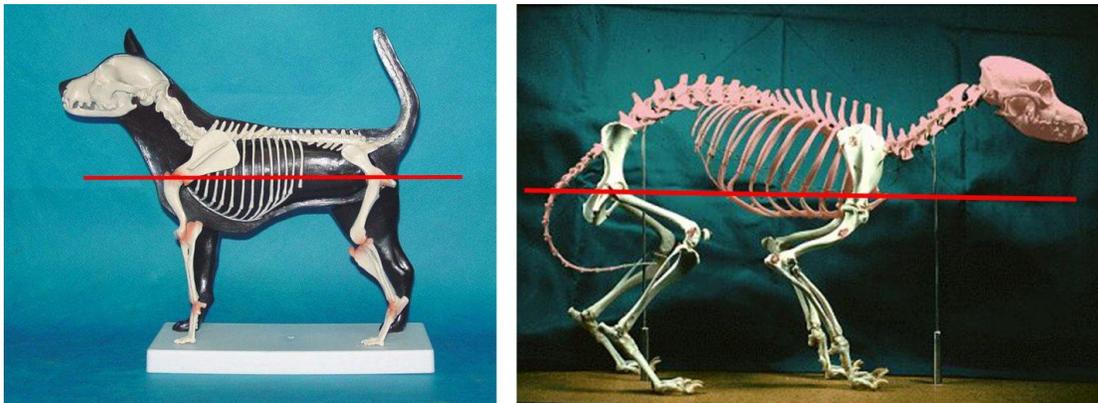
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Reflections on chest harnesses

TIERPHYSIOTHERAPIE BRIGITTE JOST · MONDAY, JANUARY 29, 2018

Translation from German: Pike Bremer <https://www.facebook.com/pikesdogtraining/>

Until a few years ago, most people in the veterinary medicine field thought that the pivot point of the front extremity in dogs is located in the shoulder joint, as it is in humans. Knowing that quadrupeds can only move ergonomically if the pivot points of the front and rear extremities are at the same height, anatomical drawings and model skeletons were created that depicted shoulder joint and hip joint at the same height. This led to rather peculiar displays:

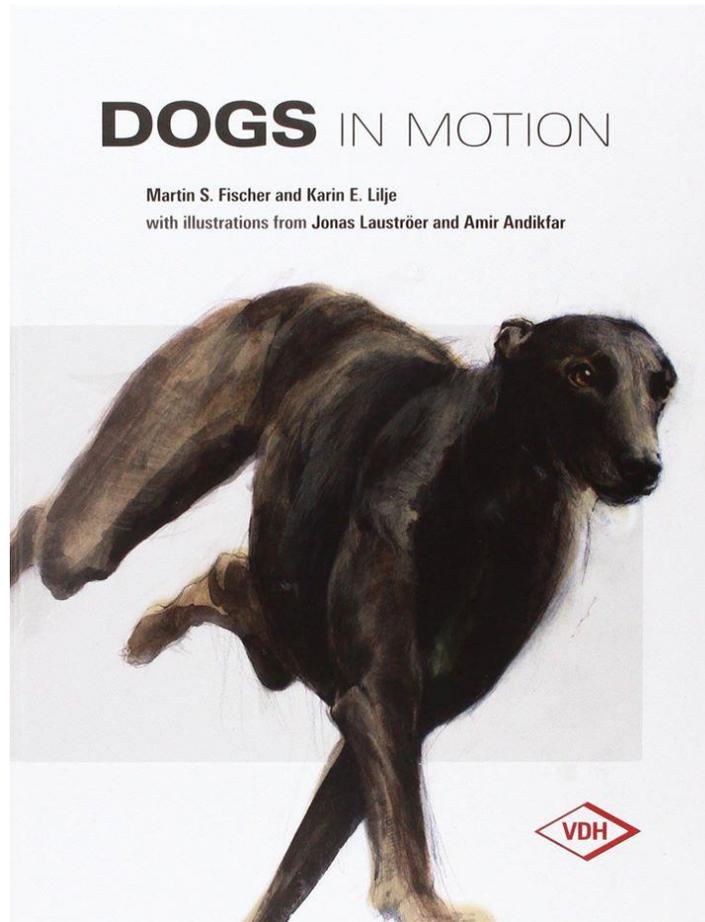


Today we know that these old models and drawings are wrong.

The "Jenaer Studie zur Fortbewegung von Hunden [Jena Dog Locomotion Study]" was conducted from 2006 to 2010 and has - through videography, marker-based motion analysis and biplanar X-ray imaging - provided amazing and revolutionary insights into the dogs' movement and gait which are especially important and should be known when evaluating the strain of chest harnesses.

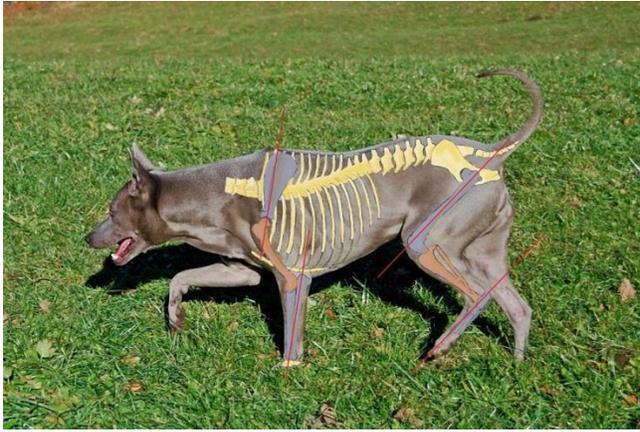
The results of this study were summarized in the book "Dogs in Motion". (Dr. Martin S. Fischer and Dr. Karin E. Lilje, VDH Service GmbH, Dortmund and Franckh-Kosmos Verlags-GmbH & Co. KG, Stuttgart, 2011).

ISBN: 9783981433906



During motion, a limb consists of *three propulsion-generating elements*. In descending order of importance for the stride length these are shoulder blade (scapula), upper arm (humerus) and forearm (radius/ulna) in the front and thigh (femur), shin/calf (tibia/fibula) and tarsus/metatarsals bones in the rear.

The first and third elements move in parallel. This knowledge is especially helpful in identifying hidden elements of the shoulder blade and thigh. Therefore, the position of the shoulder blade can be concluded from the position of the forearm during raising and lowering of the forehand.

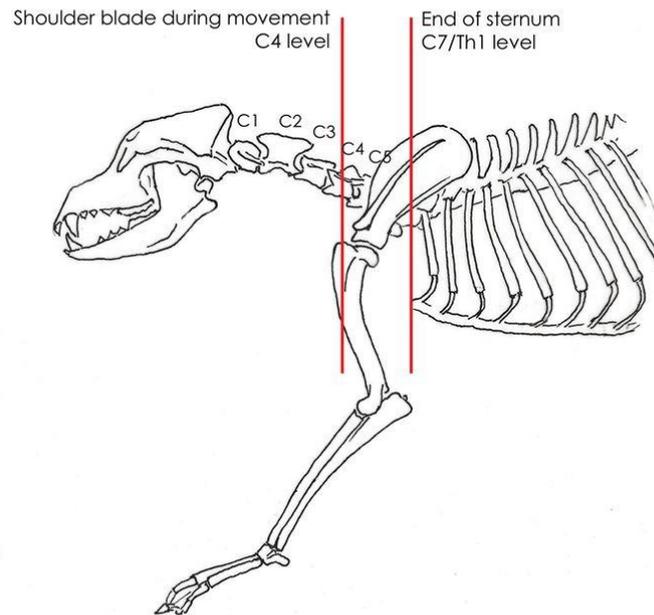


For front- and hind legs to work evenly, their pivot points must be at the same height. It was shown in the radiographs that not - as previously assumed - hip joint and shoulder joint are at the same height, but rather that the hip joint and the upper (dorsal) edge of the shoulder blade can be connected by a horizontal line.

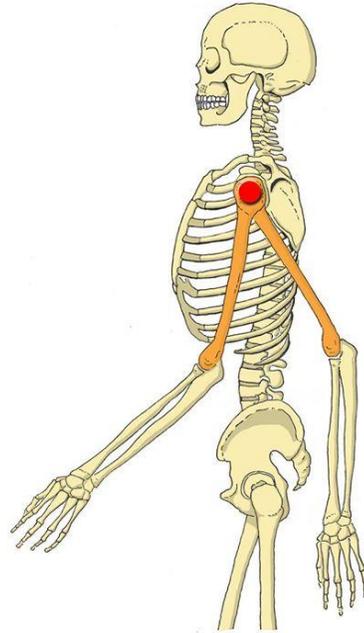
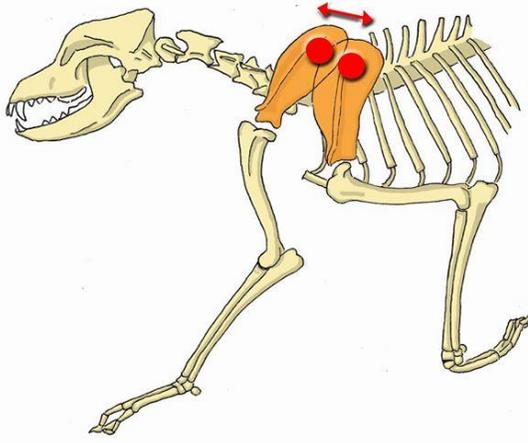


Therefore, the pivot point of the foreleg is not in the shoulder joint but at the upper edge of the shoulder blade. During lifting of the paw, the scapula is at an angle of $90-100^\circ$ and just before lowering it to the ground at an angle of $50-55^\circ$. Therefore, it rotates in a step cycle by at least 35° around the pivot point. By contrast, the angle in the shoulder joint barely changes. Expressing the contribution of the shoulder blade to the stride length in percent, results in a contribution of more than 60%.

It has further been observed that the shoulder blade advances during forward motion to the level of the 4th cervical vertebra (C4). When standing, the front edge of the scapula is at the level of the last cervical vertebra / 1. thoracic vertebrae (C7 / Th1)



Now that we know that the dog's pivot point of the front extremity is located in the upper part of the shoulder blade, while it is in the shoulder joint for humans - as shown again below - we can assume the following:



During forward movement, a harness with a horizontal strap is similarly restrictive for the dog as a rubber band around our upper arms would be for us humans. The physiological movement of the front extremity is inhibited in the dog. Just as a rubber band inhibits our physiological arm movement.



Among other things, the Jena study has shown how important the movement of the shoulder blade is for the locomotion of the dog. This also drives home the importance of choosing a harness that does not hinder the natural mobility of the shoulder area. This

means that there should be no straps around the shoulder blade (pink) or horizontally across the chest.



From a biomechanical and physiotherapeutic point of view, I recommend that you do not use EVERYDAY HARNESSSES* that have a cross strap over the chest and/or have straps, laces or fabrics resting/putting pressure across the shoulder blade.

Recommendation:

Y-Harness



X-Harness



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* Everyday harnesses means a harness that the dog wears on a daily basis, in which he runs several miles and is taken for walks, and in which he should have the best possible freedom of movement.